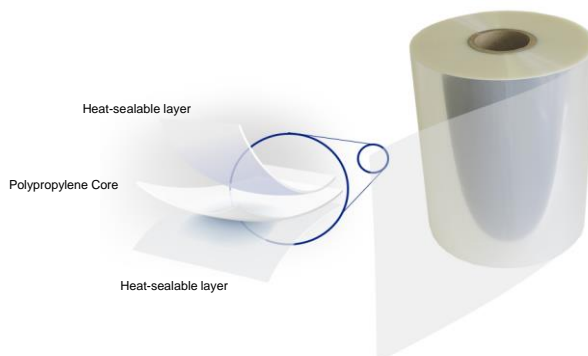


## Main Characteristics

- Both sides heat-sealable from 105°C;
- No surface treatment;
- Optimum optical properties (gloss and transparency);
- Optimum performance in portfolio-type packing machines.

## Typical Applications

- Overwrapping for food: bonbon boxes, cookies and food in general;
- Non-food overwrapping: toilet soap, toothpaste grouping;
- Overwrapping in general.



Properties	Methodology	Unit	Range	20TFW	25TFW	30TFW
<b>Physical Properties</b>						
Nominal Thickness	DIN 53370	µm	Target	20.0	25.0	30.0
			Min.	19.0	23.8	28.5
			Max.	21.0	26.3	31.5
		Gauge	Target	78.7	98.4	118.1
			Min.	74.8	93.5	112.2
			Max.	82.7	103.3	124.0
Unit Weight	ASTM D 4321	g/m <sup>2</sup>	Target	18.3	22.8	27.4
			Min.	17.3	21.7	26.0
			Max.	19.2	24.0	28.8
		lb/ream	Target	11.2	14.0	16.8
			Min.	10.7	13.3	16.0
			Max.	11.8	14.7	17.7
Yield	ASTM D 4321	m <sup>2</sup> /kg	Target	54.8	43.8	36.5
			Min.	52.2	41.7	34.8
			Max.	57.6	46.1	38.4
		in <sup>2</sup> /lb	Target	38503	30803	25669
			Min.	36670	29336	24447
			Max.	40530	32424	27020
Surface Treatment	T	ASTM D 2578	dinas/cm	Target	NA	
				Min.	NA	
Coefficient of Friction	NT	ASTM D 1894	-	Target	0.23	
				Min.	0.18	
				Max.	0.30	
<b>Optical Properties</b>						
Haze	ASTM D 1003	%	Target	1.8		
			Max.	2.5		
Gloss (45°)	ASTM D 2457	u.b.	Target	95		
			Min.	85		
<b>Mechanical Properties</b>						
Tensile Strength	MD	ASTM D 882	N/mm <sup>2</sup>	Target	160	
	TD			240		
	MD		lbf/in <sup>2</sup>	Target	23206	
	TD			34809		
Elongation at Break	MD	ASTM D 882	%	Target	170	
	TD			50		
Shrinkage	MD	ASTM D 1204	%	Target	6	
	TD			4		
Sealing Range	NT	ASTM F 88	°C	Target	105 - 130	
			°F	Target	221 - 266	
Sealing Strength	NT	ASTM F 88	g/25mm or gf/in	Target	450	
				Min.	300	
<b>Barrier Properties</b>						
TPVA   38°C / 90%RH	ASTM F 1249	g H <sub>2</sub> O / (m <sup>2</sup> .dia)	Target	≤ 6.0	≤ 5.5	≤ 4.5
WVTR   100°F / 90%RH	ASTM F 1249	g H <sub>2</sub> O / (100in <sup>2</sup> .day)	Target	≤ 0.39	≤ 0.35	≤ 0.29
TPO <sub>2</sub>   23°C / 0%RH	ASTM D 3985	cm <sup>3</sup> O <sub>2</sub> / (m <sup>2</sup> .dia)	Target	≤ 2100	≤ 1700	≤ 1500
OTR   73°F / 0%RH	ASTM D 3985	cm <sup>3</sup> O <sub>2</sub> / (100in <sup>2</sup> .day)	Target	≤ 135	≤ 109	≤ 96

1. Acronyms:

MD: Machine Direction | TD: Transverse Direction;  
NT: Non Treated Layer | T: Treated Layer;  
NA: Not Applicable.

2. Additional:

The restrained information in this datasheet represent typical data, and does not constitute genuine warranty liability as far as the product process and/or application. In case of doubts or development of other thicknesses or applications, consult your dealer or send e-mail to: contato@polofilms.com.br.

### Food Contact Regulations

SEAL Family films comply with Mercosul, ANVISA, FDA (Food and Drug Administration) and the European Community legislations for applications involving direct contact with food. Full details are provided in the Declaration of Conformity. Customers intending to use SEAL Family films for applications intended to come into contact with food should request a copy of that document from POLO Films. The MSDS (Material Safety Data Sheet), as well as the evaluation of conformity for contact with food from other legislations are also available upon request. Contact your dealer for any questions.

### Storage and Transportation Terms & Conditions

All products are stored and transported in dry, covered and clean environments. It is recommended that storage and transportation take place at temperature around 30°C and 60% relative humidity.

If the temperature and humidity are not as recommended, the following issues may occur:

- Decreased level of surface treatment, leading to printing and/or lamination difficulties;
- Decreased film transparency;
- Too low CoF, making processing and machinability difficult.

BOPP films are recommended to be kept at operating room temperature for 24 hours before use.

### Dimensional Specifications / Product Validity

<b>Width</b>	<b>Minimum: 1 mm   Maximum: 1 mm (from standard width)</b>
<b>Outer Diameter*</b>	<b>Minimum: 10 mm   Maximum: 10 mm (from standard diameter)</b>
<b>Core</b>	<b>Minimum: 1 mm   Maximum: 1 mm (from standard diameter)</b>
<b>Splices per roll</b>	<b>Maximum: 1</b>
<b>% of Splices per order</b>	<b>Maximum: 30%</b>
<b>Shelf Life (after production)</b>	<b>9 months</b>

\* For other dimensional information, consult your dealer.

### Polo Films Nomenclature

Unit Weight or Thickness    Technology    Main Feature    Sealing    Treatment

**20T FW 30**

#### Unit Weight/ Thickness

Expressed in g/m<sup>2</sup>. Used for white/opaque films;  
Expressed in µm. Used for transparent, matte and metallized films.

#### Technology

T - Tenter | C - Cast | P - BOPET.

#### Main Feature

FW - Transparent heat-sealable for overwrapping.

#### Specialty

Not applicable.

#### Sealing

0 - Not Sealable;  
1 - Sealing on the Inner Face;  
2 - Sealing on the Outer Face;  
3 - Sealing on both Sides.

#### Treatment

0 - No Treatment;  
1 - Treatment on Inner Face;  
2 - Treatment on Outer Face;  
3 - Treatment on both Sides.